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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/424,028	11/16/99	BRIDGHAM J	5525-0035.10

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EXAMINER	
TUNG, J	
ART UNIT	**PAPER NUMBER**
1656	4

DATE MAILED: 09/14/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/424,028	Bridgham et al.
Examiner	**Group Art Unit**
Joyce Tung	1656

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-34 is/are pending in the application.

Of the above, claim(s) 1-23 and 29-34 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 24-28 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☒ Claims 1-34 are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☒ Notice to comply

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this art unit 1656.

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in response to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-7, 29 and 18-23, drawn to an apparatus for sequential processing of a plurality of analytes and a method of generating images of a planar array of microparticles to track positions of the microparticles during a sequence of processing steps, classified in class 435, subclass 288.5 and 288.7.

Group II, claim(s) 8-10, drawn to a flow chamber comprising an inlet and an outlet, classified in class 435, subclass 288.5.

Group III, claim(s) 11, drawn to a detection apparatus for detecting a sequence of optical signals, classified in class 435, subclass 288.7.

Group IV, claim(s) 12-17, drawn to a device-readable medium embodying a program of instruction for execution, classified in class 435, subclass 288.7.

Group V, claim(s) 24-28, drawn to an array of polynucleotides, classified in class 536, subclass 22.1.

Group VI, claim(s) 30-34, drawn to a flow chamber for immobilizing microparticles in a monolayer, classified in class 435, subclass 288.3/288.5.

2. The inventions listed as Groups I-VI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group I is drawn to an apparatus for sequential processing of a plurality of analytes and a method of generating images of a planar array of microparticles, Group II is drawn to a flow chamber comprising an inlet, an outlet and a planar cavity, Group III is drawn to a detection apparatus for detecting a sequence of optical signals from each of a plurality of microparticles, Group IV is drawn to a device-readable medium, Group V is drawn to an array of polynucleotide and Group VI is drawn to a flow chamber for immobilizing microparticles in a monolayer.

3. During a telephone conversation with Peter Dehlinger on 8/31/2000 a provisional election was made without traverse to prosecute the invention of Group V, claims 24-28. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-23 and 29-34 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

5. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

6. The title of the invention is not descriptive because the old title is directed to a system and an apparatus for sequential processing of analytes, while the claim language is directed to an array of polynucleotides. Thus a new title is required that is clearly indicative of the invention to which the claims are directed.

7. Claims 24 and 25 are objected to because of the following informalities: The word "polynuceotide"in claim 24 might be a typographical mistake and there are a duplicate word "between" in claim 25. It might also be a typographical mistake. Appropriate correction is required.

Claim Rejections - 35 U.S.C. § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 24-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claims 24-28 are vague and indefinite because of the language "a closely packed planar array of microparticles". It is unclear how closely the planar array of microparticles is packed.

b. Claims 25 is vague and indefinite because of the language "wherein closely packed with reference to the planar array of microparticles". It is unclear what is encompassed by the language "reference". In addition, the language "wherein closely packed with reference to the planar array of microparticle requires either that the number of microparticles per unit area in the planar array is at least eighty percent of the number of microparticles in a hexagonal array of equal area" is unclear what is meant by the phrase. It is suggested to clarify uncertainty.

Claim Rejections - 35 U.S.C. § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dower et al. (5,708,153).

Dower et al. disclose a method for synthesizing random oligomers on particles (See the Abstract). The method involves using a plurality of solid supports. Different solid support has different oligomer sequence (See column 7, lines 25-28). The solid support produces a large library and each support has attached a single oligomer sequence (See column 2, lines 54-58). The solid supports may be composed of single particle (See column 2, lines 61-64). The size of the solid support is in the range of 1nm to 100μM (See column 8, lines 34-35). The support is apportioned in a plurality of reaction vessels (See column 7 can , lines 30-32). The oligomer on the solid support can be nucleic acid (See column 2, line 50-53).

Dower et al. do not disclose that the solid support is on a planar array, but Dower et al. do indicate that the synthesis of peptides on 96 plastic pins which fit the format of standard microtiter plates (See column 2, lines 36-38).

Dower et al. also do not disclose the polynucleotide comprising a cDNA library, but the solid support of Dower et al. has oligonucleotides attached. cDNA is oligonucleotide.

The teachings of Dower et al. suggest the limitations of instant claims 24-27, Instant claims 24-27 are drawn to an array of polynucleotides which is a planar array of microparticle in which the size of the microparticles is between about 0.1μm and 100μm. The polynucleotide comprises a cDNA library.

One of ordinary skill in the art at the time of the instant invention would have been motivate to make an array which comprises a polynucleotide as claimed for a reasonable expectation of success because Dower et al. do indicate that the synthesis of peptides on 96 plastic pins which fit the format of standard microtiter plates (See column 2, lines 36-38), the solid support of Dower et al. has a polynucleotide attached and the solid support can be used to produce large synthetic oligomer libraries (See column 3, lines 42-43). It would have been prima facie obvious to make the array as claimed.

12. Claims 24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dower et al. (5,708,153) in view of Matson et al. (5,429,807).

The limitations of claim 24 are rejected under 35 U.S.C 103(a) over Dower et al. via the teachings of Dower et al. as set forth in section 11 above.

Dower et al. do not indicate that a flow chamber is used for disposing the solid support.

Matson et al. disclose that an automated method and apparatus for performing biopolymer synthesis on a two-dimensional support surface whereby a two- dimensional matrix or

array of biopolymer are obtained on the surface (See the Abstract). There is an open chamber or channel in a surface at least one cavity is used for applying reagent to the surface of solid support. For each cavity the reagents are introduced into one end of the cavity and collected from the other end of the cavity (See the Abstract). A one-dimensional array of biopolymers are formed on the support and each element of the array contains a population of biopolymers having identical sequence (See the Abstract). The apparatus is also used for DNA synthesis (See column 1, lines 28-34). The disclosure indicates the various modification and improvements may be made (See column 8, lines 20-24).

Matson et al. do not disclose a flow chamber used. However, one chamber used has the same physical structure (See column 3, lines 45-60) and function as the flow chamber as described in the specification (See pg. 6, lines 25-30).

The teachings of Dower et al. and Matson et al. suggest the limitation of instant claims 24 and 28. Instant claim 28 recite a further limitation to instant claim 24 in which the flow chamber is applied.

One of ordinary skill in the art at the time of the instant invention would have been motivated to combine the references of Dower et al. and Matson et al. because Dower et al. disclose that the solid support can used to produce large synthetic oligomer libraries (See column 3, lines 42-43) and the chamber of Matson et al. has the same physical structure including the inlet and outlet and function as the flow chamber as described in the specification (See pg. 6, lines 25-30). Thus an artisan of ordinary skill in the art would have made a flow chamber as

claimed for a reasonable expectation of success because as indicated by Matson et al. the various modification and improvements may be made (See column 8, lines 20-24). Thus using one flow chamber simplifies the manufactory procedure instead of using a plurality of parallel open channel for the same function as taught by Matson et al.. It would have been prima facie obvious to make the flow chamber as claimed.

Sequence Rules

13. This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures.

If this application is a Continuation/Divisional of USSN 08/659,453 wherein the applicant has complied with the sequence rules. The applicant may request to use the CRF from that application. It is suggested to indicate in the response.

APPLICANT IS GIVEN THE RESPONSE PERIOD SET FORTH IN THIS OFFICE ACTION WITHIN WHICH TO COMPLY WITH THE SEQUENCE RULES, 37 CFR 1.821-1.825. Failure to comply with these requirements will result in **ABANDONMENT** of the application under 37 CFR 1.821(g).

14. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (703) 305-7112. The examiner can normally be reached on Monday-Friday from 8:00 AM-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached at (703) 308-1152.

Any inquiries of a general nature or relating to the status of this application should be directed to the Chemical/Matrix receptionist whose telephone number is (703) 308-0196.

15. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Art Unit 1656 via the PTO Fax Center located in Crystal Mall 1 using (703) 305-3014 or 308-4242. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989).

Joyce Tung

September 11, 2000

W. Gary Jones
Supervisory Patent Examiner
Technology Center 1600

9/11/00

Application No.: 09/424028

NOTICE TO COMPLY WITH REQUIREMENTS FOR PATENT APPLICATIONS CONTAINING NUCLEOTIDE SEQUENCE AND/OR AMINO ACID SEQUENCE DISCLOSURES

The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 C.F.R. 1.821 - 1.825 for the following reason(s):

☒ 1. This application clearly fails to comply with the requirements of 37 C.F.R. 1.821-1.825. Applicant's attention is directed to these regulations, published at 1114 OG 29, May 15, 1990 and at 55 FR 18230, May 1, 1990.

☒ 2. This application does not contain, as a separate part of the disclosure on paper copy, a "Sequence Listing" as required by 37 C.F.R. 1.821(c).

☒ 3. A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 C.F.R. 1.821(e).

☐ 4. A copy of the "Sequence Listing" in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 C.F.R. 1.822 and/or 1.823, as indicated on the attached copy of the marked -up "Raw Sequence Listing."

☐ 5. The computer readable form that has been filed with this application has been found to be damaged and/or unreadable as indicated on the attached CRF Diskette Problem Report. A Substitute computer readable form must be submitted as required by 37 C.F.R. 1.825(d).

☐ 6. The paper copy of the "Sequence Listing" is not the same as the computer readable from of the "Sequence Listing" as required by 37 C.F.R. 1.821(e).

7. Other: _____

Applicant Must Provide:

☒ An initial or substitute computer readable form (CRF) copy of the "Sequence Listing".

☒ An initial or substitute paper copy of the "Sequence Listing", as well as, an amendment directing its entry into the specification.

☒ A statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 C.F.R. 1.821(e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d).